CONTENTS

AP Statistics

Name: _____ Date: _____

UNIVARIATE DATA

AP Statistics

1. Which of the choices below is greater for the given sample?
   2, 3, 4, 4, 5, 6, 10, 11?

   a. interquartile range
   b. range
   c. standard deviation
   d. variance
   e. all of them are the same

2. Which of the choices below is different from the others for the given sample?
   4, 4, 4, 4, 4, 4, 12, 14

   a. interquartile range
   b. Q1
   c. median
   d. mode
   e. Q3

3. If the manager of a certain store decides to raise all prices by $20, which of the following values does not change?

   a. mean
   b. median
   c. mode
   d. standard deviation
   e. both median and mode stay the same

4. Which set of data has the standard deviation that is different from the others?

   a. 4, 8, 12, 16, 20
   b. 22, 26, 30, 34, 38
   c. 1, 5, 9, 13, 17
   d. 21, 24, 28, 32, 36
   e. 53, 57, 61, 65, 69

5. Which set of data has the largest mean?

   a. 1, 5, 18, 26, 33
   b. 4, 5, 18, 26, 33
   c. 4, 5, 11, 26, 33
   d. 4, 5, 11, 22, 33
   e. 1, 5, 11, 22, 33

6. Which set of data has an outlier?

   a. 1, 5, 25, 29, 30, 77
   b. 4, 5, 18, 26, 36, 77
   c. 1, 2, 18, 26, 36, 77
   d. 4, 5, 18, 19, 39, 77
   e. 1, 4, 11, 22, 38, 77

7. Using the Empirical Rule, what fraction of the population lies between 9 and 21 if the mean equals 15 and standard deviation equals 3?

   a. 68%
   b. 34%
   c. 47.5%
   d. 99.7%
   e. 95%

8. Using the Empirical Rule, what fraction of the population lies between 5 and 11 if the mean equals 11 and standard deviation equals 6?

   a. 68%
   b. 34%
   c. 47.5%
   d. 99.7%
   e. 95%

9. Using the Empirical Rule, what is the mean and standard deviation if 68% of the data lies between 6 and 16?

   a. 11, 5
   b. 11, 2.5
   c. 16, 10
   d. 16, 5
   e. 11, 1.67

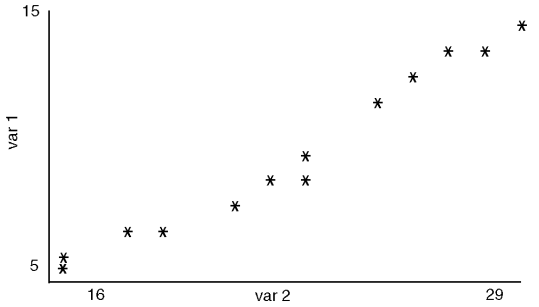
10. Using the Empirical Rule, what is the mean and standard deviation if 99.7% of the data lies between 6 and 16?

    a. 11, 5
    b. 11, 2.5
    c. 16, 10
    d. 16, 5
    e. 11, 1.67

25. What does the squared correlation coefficient, r^2, measure?

    a. the slope of the least squares regression line
    b. the intercept of the least squares regression line
    c. the extent to which cause and effect is present in the data
    d. the fraction of the variation of one variable that is explained by the least squares regression on the other
    e. the amount of fit between two variables

26. Given the scatter plot as shown.



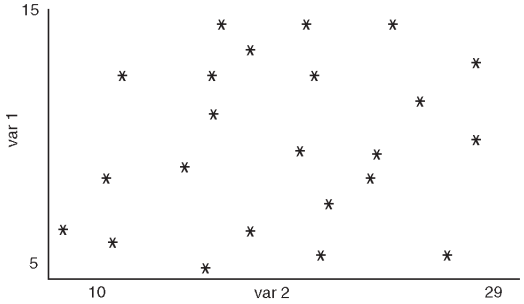
    Which of the following is the most reasonable value for the correlation coefficient?

    a. 0.01
    b. 0.43
    c. 0.73
    d. 0.91
    e. 1.00

27. A study of elementary school children, ages 6 to 10, found a high negative correlation between number of teeth and score on a vocabulary test. What is the most likely reason for the correlation?

    a. age as a lurking variable
    b. a causal relationship
    c. Simpson's paradox
    d. the Hawthorne effect
    e. an error in computations since teeth have nothing to do with test scores

28. Given the scatter plot as shown.



    Which of the following is the most reasonable value for the correlation coefficient?

    a. 0.01
    b. 0.43
    c. 0.73
    d. 0.91
    e. 1.00

29. Students were tested before and after a course to see if a pre-test could be used to predict a student's success. The results are shown in the table.

Pre-test	Post-test
17	73
21	66
11	64
16	61
15	70
11	71
24	90
27	68
19	84
8	52

    Which of the following is true?

    a. there is a strong positive correlation between pre-test and post-test scores
    b. there is a strong negative correlation between pre-test and post-test scores
    c. there is a weak positive correlation between pre-test and post-test scores
    d. there is a weak negative correlation between pre-test and post-test scores
    e. the correlation coefficient is 0.318

9. A city contains 41 supermarkets. An inspector wants to check compliance with a new city ordinance banning minors from working late hours. Because of the time required, he can inspect only 10 markets. He decides to choose a stratified random sample and stratifies the markets by sales volume. Stratum A consists of 4 large chain stores; the inspector decides to inspect 3 of them. Stratum B consists of 12 smaller chain stores; 4 out of the 10 will be inspected. Stratum C consists of 24 locally owned small stores; 3 of these 20 will be inspected. Let "Yes" mean that the store is in compliance and "No" mean that it is not. The population (unknown to the inspector, of course) is as follows.

Stratum A		**Stratum B**		**Stratum C**			
Store #	Compliance	Store #	Compliance	Store #	Compliance	Store #	Compliance
1	Yes	1	No	1	Yes	13	Yes
2	Yes	2	Yes	2	Yes	14	Yes
3	No	3	No	3	No	15	No
4	Yes	4	No	4	Yes	16	Yes
5	Yes	5	Yes	5	No	17	Yes
6	No	6	No	6	No	18	No
		7	Yes	7	No	19	No
		8	No	8	Yes	20	No
		9	No	9	No	21	Yes
		10	Yes	10	No	22	Yes
		11	Yes	11	Yes	23	No
		12	No	12	No	24	No

Line
112 07817 28218 79856 92460 48978 92545 52751 41071 79167 98274 25389 33465
113 00544 15554 63346 85431 37506 05926 02380 33498 27797 84077 18802 15335
114 23648 52381 32299 28244 89847 29119 10425 02268 37641 54302 45237 93858
115 15640 50453 98416 23095 78022 14752 08755 75287 83056 35082 94180 86969
116 06766 79935 46361 78771 90133 15746 80427 26218 48184 83115 44931 18876

a. Use the random number table to choose a stratified random sample of size 10 allotted among the strata as described above. (Begin on line 112)

b. Use your sample results to *estimate* the proportion of the entire population of stores that are in compliance with the ordinance.

c. Use the description of the population given above to find the *true* proportion of stores in compliance. How does this compare with the *estimate* in part (b)?

33. A second grade class at a small school was checked for dental cavities.
The results are shown in the table below.

	Cavities	No Cavities
Boys	12	8
Girls	15	11

i. What is the probability that a student selected at random has a cavity?

a. 0.25
b. 0.413
c. 0.576
d. 0.587
e. 0.60

ii. Given that a student selected at random was a girl, what is the probability that the student does not have a cavity?

a. 0.25
b. 0.413
c. 0.423
d. 0.704
e. 0.733

34. If a student rolls three dice, what is the probability that exactly two of them will show an even number?

a. 3/8
b. 1/2
c. 5/8
d. 2/3
e. 2

35. Suppose a student rolls 4 dice. What is the probability that exactly two of them will show a number greater than 4?

a. 1/9
b. 2/9
c. 8/27
d. 3/8
e. 2/3

36. The probability that a certain movie is sold out for an evening performance is 0.30. Bill wants to take Gina to the movies this weekend. What is the probability that the movie is sold out on both Friday and Saturday night?

a. 0.09
b. 0.21
c. 0.30
d. 0.49
e. 0.60

37. A marathon runner enters a series of races. From past experience, the runner wins the race 5% of the time, finishes second 8% of the time, and places third 15% of the time. First place is awarded $1,000, second place wins $500, and third place gets $300.

i. How much does the runner win on average each weekend?

a. $45.00
b. $135.00
c. $161.00
d. $482.00
e. $600.00

ii. Given that the runner placed in the top three, what is the expected amount to be awarded to the runner?

a. $45.00
b. $135.00
c. $161.00
d. $482.00
e. $600.00